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ABSTRACT

This study was conducted to ascertain the effects of employment on the academic performance of community college students. The grade point averages of 830 full-time students at Wilkes Community College (North Wilkesboro, N.C.) were analyzed to determine: (1) if working students' GPA's differed significantly from those of the total student population and from those of nonworking students; (2) if working a specified number of hours per week produced significant differences in GPA's; (3) if specific academic loads produced significant differences in GPA's among working students; (4) if working students in various degree programs obtained significantly different GPA's; (5) if working females make significantly different GPA's than working males; (6) if working freshmen made significantly different GPA's than working sophomores; and (7) if single working students made significantly different GPA's than married or other working students. From the data analyzed, it was concluded that at the .05 level of significance: (1) working students carrying an academic load of 12 to 15 credit hours and working 40 or more hours per week made higher GPA's than students with the same academic load working from 27 to 39 hours per week; (2) working students enrolled in the College Transfer program and working from 14 to 26 hours per week made higher GPA's than did those in this same program working 40 or more hours per week. No significant differences were found in the other comparisons. (Author/DB)

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AN ANALYSIS OF CURRENT GRADE POINT AVERAGES OF EMPLOYED FULL-TIME STUDENTS AT WILKES COMMUNITY COLLEGE

APPLIED EDUCATION RESEARCH
AND EVALUATION

by

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ABSTRACT

TITLE: An Analysis of Current Grade Point Averages of Employed Full-Time Students at Wilkes Community College

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This study was conducted to ascertain the effects of employment on the academic performance of community college students.

During the investigation, the current grade point averages (G.P.A's.) of 830 full-time students enrolled in the Spring, 1973 term at Wilkes Community College, North Wilkesboro, North Carolina were analyzed to determine: 1) if working students' G.P.A's. differ significantly from those of the total student population; 2) if working students G.P.A's. differ significantly from those of non-working students; 3) if working a specified number of hours per week produces significant differences in G.P.A's.; 4) if specific academic loads produce significant differences in G.P.A's. among working students; 5) if working students in various degree programs obtain significantly different G.P.A's.; 6) if working females make significantly different G.P.A's. than working males; 7) if working freshmen make significantly different G.P.A's. than working sophomores; and 8) if single working students make significantly different G.P.A's. than married/other working students.

From the data analyzed in this study, it was concluded that at the .05 level of significance: 1) working students attempting an academic load of 12 to 15 credit hours and working 40 or more hours per week make higher G.P.A's. than students attempting the same academic load and working from 27 to 39 hours per week; 2) working students enrolled in the College Transfer program and working from 14 to 26 hours per week make higher G.P.A's. than those in this same program working 40 or more hours per week. No significant difference was found between the G.P.A's.

of: 1) working students and the total student population; 2) working students and non-working students; 3) working students as classified by hours worked; 4) working students as classified by sex; 5) working students as categorized by academic classification; and 6) working students as classified by marital status.

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AN ANALYSIS OF CURRENT GRADE POINT AVERAGES OF EMPLOYED FULL-TIME STUDENTS AT WILKES COMMUNITY COLLEGE

I. STATEMENT OF THE PROBLEM

The purpose of this research study was to determine whether there is a significant difference between current grade point averages of employed full-time students and the total full-time student population. While examining the above problem, answers were sought to the following sub-problems:

1) Is there a significant difference between current grade point averages of employed and non-employed full-time students?

2) Is there a significant difference between current grade point averages of full-time students and the total number of hours worked per week?

3) Is there a significant difference between current grade point averages of full-time students working a designated number of hours per week as categorized by academic load?

4) Is there a significant difference between current grade point averages of full-time students working a

designated number of hours per week as categorized by degree program (college transfer, technical, or vocational)?

5) Is there a significant difference between current grade point averages of full-time students working a designated number of hours per week as categorized by sex (male, female)?

6) Is there a significant difference between current grade point averages of full-time students working a designated number of hours per week as categorized by academic classification (freshman, sophomore)?

7) Is there a significant difference between current grade point averages of full-time students working a designated number of hours per week as categorized by marital status (single, married, other)?

II. HYPOTHESES

During the investigation of the above problem, it was hypothesized that there is a significant difference between current grade point averages of employed full-time students and the total full-time student population. The following sub-hypotheses were also tested:

1) There is a significant difference between current grade point averages of employed and non-employed full-time students.

2) There is a significant difference between current grade point averages of full-time students and the total number of hours worked per week.

3) There is a significant difference between current grade point averages of full-time students working a designated number of hours per week as categorized by academic load.

4) There is a significant difference between current grade point averages of full-time students working a designated number of hours per week as categorized by degree program (college transfer, technical, vocational).

5) There is a significant difference between current grade point averages of full-time students working a designated number of hours per week as categorized by sex (male, female).

6) There is a significant difference between current grade point averages of full-time students working a designated number of hours per week as categorized by academic classification (freshman, sophomore).

7) There is a significant difference between current grade point averages of full-time students working a designated number of hours per week as categorized by marital status (single, married, other).

III. BACKGROUND AND SIGNIFICANCE OF THE STUDY

As background for this study the role of the employed student was examined in the community college through a review of the existing literature concerning the effect of employment on academic achievement and through an examination of the problems encountered by Wilkes Community College, North Wilkesboro, North Carolina, in counseling the employed student.

A manual ERIC search conducted by participants in this project produced a larger number of pertinent literature relating to the subject than did an ERIC search requested from the North Carolina Science and Technology Research Center.

Wilkes Community College opened in January of 1965 in accordance with the 1963 North Carolina General Assembly passage of the Community College Act which created a system of comprehensive community colleges and technical institutes under the State Board of Education. As a comprehensive institution, Wilkes Community College offers a variety of educational programs of continuing education for adults besides offering programs of study in the two-year college transfer, the two-year technical, and the one-year vocational areas.

The major purposes of Wilkes Community College are:

1) to provide two years of academic college credit courses for those students who desire to transfer to four-year or senior colleges or universities, and for those students for whom two years of general college will satisfy their educational needs.

2) to provide a variety of two-year programs in technical studies, the successful completion of which will afford the student the greatest opportunity to enter an occupation.

3) to provide a variety of one-year vocational trade programs, which may be three or four quarters in length, for those who desire to prepare themselves for entrance into new trades.

4) to provide a variety of programs and courses for those who desire to improve their competencies in their present occupations.

5) to provide a variety of programs and courses for those adults who desire personal fulfillment through continuing education.

6) to provide opportunities for those who desire to earn a high school diploma or equivalency certificate.

7) to provide industrial pre-service and in-service training at a level beyond that which the public schools can present.

In meeting the purposes as set forth, Wilkes Community College attracts many students who are working either on a part-time or a full-time basis who wish for any number of reasons to continue their education. Wilkes Community College has both a day and night school program, thereby meeting the scheduling needs of its working student population.

According to Dr. Howard Thompson, President of Wilkes Community College, there are no concrete guidelines for counseling employed students in terms of academic load. Dr. Thompson has indicated that such a study would be helpful and would be supported by Wilkes Community College. Mr. Bob Thompson, Director of Guidance Services at W.C.C. also acknowledged the need for this study.

THE EMPLOYED STUDENT AT WILKES COMMUNITY COLLEGE AND NATIONAL SUPPORTING LITERATURE

During the spring term at Wilkes Community College, over seventy-five per cent of the 1154 students enrolled were employed in part-time or full-time jobs. Other studies have shown that between fifty and sixty-six per cent of Community/Junior College students are employed at least part-time (Garbin, 1971; Medsker and Trent, 1965; School and Society, 1969). Baird (1969) reported eighty-three per cent employment in his study of 4009 students from twenty-nine colleges.

EMPLOYMENT AS RELATED TO ACADEMIC ACHIEVEMENT

Various studies have been conducted to ascertain the effects of employment upon academic achievement. Fitch (1966) found that the percentage of students making below a 'C' average increased as the number of hours employed per week increased. This is supported by Hay, Evans, and Lindsay (1970) who found that employment for more than fifteen hours per week generally produced lower academic performance than that of the non-employed students.

Other studies have been conducted which produced no significant difference between the academic achievement of employed and non-employed students. In 1957, Donald Trueblood conducted a study to determine the effects of employment on academic achievement. Trueblood surmised from his study that employment did not adversely or positively affect scholastic achievement at the college level. These findings have been supported by other studies (Anderson, 1966; Hammond, 1970; Henry, 1963; and Merritt, 1970).

GENDER AS RELATED TO ACADEMIC ACHIEVEMENT

Investigations have been conducted to determine if there is a significant difference between the academic achievement of male and female students. Anthony Barron (1968) found that female students maintained significantly

higher grades than males. In a study of students twenty-five years of age and older, Beagle (1970) found that the academic achievement of females was significantly higher than that of males. Fitch (1966) and Sensor (1964) support such findings.

MARITAL STATUS AS RELATED TO ACADEMIC ACHIEVEMENT

A study conducted by Jensen and Clark (1958) determined that there is no significant difference between the academic achievement of single and married students. However, Beagle (1970) found that married adults performed at a significantly higher academic level than single adults.

ACADEMIC LOAD AS RELATED TO ACADEMIC ACHIEVEMENT: IMPLICATIONS FOR STUDENT COUNSELING

Various institutions restrict the academic load of employed students on the assumption that the number of hours employed has an adverse affect on academic achievement (Fitch, 1966). Anderson (1966) found no significant difference between the academic load of employed students as compared to academic achievement. This is supported by Merrill and Osborn (1959). Fitch (1966) reported that in her institution students are not restricted in academic load on the basis of hours employed, but that the results of her study show that employment can negatively affect a student's academic

achievement. She advises that students employed more than ten hours per week be given careful attention by counselors with respect to academic loads.

IV. DEFINITION OF TERMS

The following terms and their definitions are used in the study:

freshman student - a student who has earned fewer than 45 quarter hours.

sophomore student - a student who has earned 45 or more quarter hours.

full-time student - a student who is currently attempting 12 or more quarter hours.

employed student, class 1 - a student who works 1-13 hours per week.

employed student, class 2 - a student who works 14-26 hours per week.

employed student, class 3 - a student who works 27-39 hours per week.

employed student, class 4 - a student who works 40 or more hours per week.

four quality point scale - grading system giving numeric value to grade earned in a course as follows: A = 4 points, B = 3 points, C = 2 points, D = 1 point, F = 0 points.

current hours attempted - current number of hours attempted by a student at Wilkes Community College, Spring Quarter, 1973.

current hours earned - current number of hours earned by a student at Wilkes Community College, Spring Quarter, 1973.

current quality points - current hours attempted times the quality point association of grades received.

current grade point average - current hours attempted divided by current quality points.

current academic load - same as current hours attempted.

married student - a student who is married.

single student - a student who has never been married.

other student - a student who has been married, but who is divorced, separated, or widowed.

college transfer student - a student working toward the Associate Degree whose credits are transferable to senior institutions.

technical student - a student in a terminal career course of study working toward the Associate in Applied Science Degree.

vocational student - a student in a terminal career course of study working toward a diploma.

V. LIMITATIONS OF THE STUDY

The following variables were noted but not controlled and are therefore seen as limitations to the study:

1) The personality of the individual student and its effect on academic achievement were not measured.

2) The motivation factors as related to academic achievement and academic course load were not analyzed.

3) No attempt was made to determine the number of hours devoted per week by students to maintaining grade point average.

4) The individual student's job classification and function was not analyzed to determine relationship of work to course of study.

5) Individual student course load was not studied to determine relative ease or difficulty of course load and its effect on current grade point average.

VI. BASIC ASSUMPTIONS

The following assumptions were made:

1) It was assumed that the current grade point averages were normally distributed within the population.

2) It was assumed that the data supplied by students regarding hours worked per week was accurate.

3) It was assumed that the individual abilities of

the employed and non-employed students were normally distributed within the population.

4) In assuming normal distribution in the population, homogeneity of variance was assumed.

VII. PROCEDURES FOR COLLECTING DATA

The data used in the study was collected during the 1973 Spring Quarter registration week, utilizing forms provided in the Contract Registration System contracted by Wilkes Community College from Appalachian State University in Boone, North Carolina. The student is given an update student data sheet each quarter at registration time to update data in the file.

Data was collected for the study using a print out of the master file. Raw data was coded and transcribed into punched cards for computer analysis. This procedure was necessary to insure compatibility of data with the computer system for statistical analysis.

The data analyzed in this study included:

current hours attempted

current hours earned

current grade points

number of hours worked per week

current academic load

sex

marital status

degree program (college transfer, technical, vocational)

classification (freshman, sophomore)

VIII. PROCEDURES FOR TREATING DATA

Upon the completion of data collection and transcription of the data into punched cards, the data was tallied into sub-groups in preparation for statistical analysis. Parametric statistical procedures (T-test, Analysis of Variance) were applied in that the following were satisfied:

1) the dependent variable (grade point average) was interval.

2) as stated in assumptions, the grade point averages were assumed to be normally distributed in the population.

3) as stated in assumptions, homogeneity of variance was assumed.

According to Ferguson (1971), some bias may be introduced in the F ratio from the Analysis of Variance two-way classification if the cells being analyzed depart from equality and/or from proportionality. A non-parametric technique, Chi Square, was therefore, applied to determine whether the cell frequencies in the rows and columns departed significantly from proportionality.

T-tests were applied to determine:

1) if a significant difference existed between current

grade point averages of employed full-time students and the total full-time student population.

2) if a significant difference existed between current grade point averages of employed and non-employed full-time students.

Analysis of Variance, one-way, was applied to determine if a significant difference existed between current grade point averages of full-time students and the total number of hours worked per week.

Analysis of Variance, two-way, was applied to determine:

1) if a significant difference existed between current grade point averages of full-time students working a designated number of hours per week as categorized by academic load.

2) if a significant difference existed between current grade point averages of full-time students working a designated number of hours per week as categorized by degree program (college transfer, technical, or vocational).

3) if a significant difference existed between current grade point averages of full-time students working a designated number of hours per week as categorized by sex (male, female).

4) if a significant difference existed between current grade point averages of full-time students working a

designated number of hours per week as categorized by academic classification (freshman, sophomore).

5) if a significant difference existed between current grade point averages of full-time students working a designated number of hours per week as categorized by marital status (single, married, other).

T-tests were also applied to determine if a significant difference existed between the current grade point averages of full-time students working 40 or more hours per week and full-time students working 1-13, 14-26, and 27-39 hours per week as categorized by:

1) sex (male, female)
2) classification (freshman, sophomore)
3) degree program (college transfer, technical)
4) academic load (12-15 hours, 16 or more)
5) marital status (single, married, other)

IX. ANALYSIS OF DATA

To test the hypothesis and related sub-hypotheses, appropriate statistical techniques were applied. This section contains an analsis of the results of the statistical applications.

The Hypothesis

To test the directional hypothesis that there is a significant difference between current grade point

averages of employed full-time students and the total full-time student population, a T-test for Independent Samples was applied (Table I). Inasmuch as the critical value of T was not exceeded at the .05 level of significance, the directional hypothesis was rejected and the null hypothesis was accepted.

Sub-Hypothesis I

The directional sub-hypothesis that there is a significant difference between current grade point averages of employed and non-employed full-time students was tested by applying a T-test for Independent Samples (Table II). Since the critical value of T at the .05 level of significance was not exceeded, the directional sub-hypothesis I was rejected and the null sub-hypothesis was accepted.

Sub-Hypotheses II-VII

Before applying Analysis of Variance to test sub-hypotheses II through VII, the data was divided into four categories of hours worked per week (1-13, 14-26, 27-39, and 40+) and tallied by: 1) female-male, 2) freshman-sophomore, 3) college transfer-technical-vocational, 4) single-married-other, and 5) 12-15 credit hours-16 or more credit hours. Chi Square was then applied to determine equality and proportionality of the cells of data in that the F ratio obtained from the Analysis of Variance could

TABLE I

ANALYSIS OF MEAN CURRENT GRADE POINT AVERAGES OF EMPLOYED FULL-TIME STUDENTS AND THE TOTAL FULL-TIME STUDENT POPULATION

Student Population	Total No. of Cases	Mean Grade Point Avg.	Standard Deviation	Variance
Employed	606	2.4133	0.897	0.8061
Total Population	830	2.3964	0.945	0.8945
T-Ratio = 0.3408		Degrees of Freedom = 1434		

*P $<$ .05
**P $<$ .01

TABLE II

ANALYSIS OF MEAN CURRENT GRADE POINT AVERAGES OF EMPLOYED AND UNEMPLOYED FULL-TIME STUDENTS

Student Population	Total No. of Cases	Mean Grade Point Avg.	Standard Deviation	Variance
Unemployed	224	2.3508	1.063	1.1305
Employed	606	2.4133	0.897	0.8061

T-Ratio = -0.8435 Degrees of Freedom = 828

*P < .05
**P < .01

be biased if the cells are significantly unequal or disproportionate (Ferguson, 1971). The critical value of Chi Square at the .05 level of significance was exceeded on all tests (Table III).

The following adjustments were made and the Chi Square test applied again:

1) the 40+ hours worked per week category was removed from analysis.

2) the vocational degree program students were removed due to insufficient numbers in the cells.

3) the "other" marital category was combined with the "married" category due to an empty cell and insufficient numbers in the cells.

The Chi Square test on the adjusted data resulted in more equality and proportionality within the cells of data (Table IV). The forty or more hours worked per week category, therefore, was not included in the Analysis of Variance, two-way classification, but T-tests for Independent Samples were applied using the forty or more hours worked per week data with the other three categories of hours worked per week.

Sub-Hypothesis II. To test directional sub-hypothesis that there is a significant difference between current grade point averages of full-time students working a designated number of hours per week, a one-way Analysis of Variance was

TABLE III

TABULATION OF EMPLOYED FULL-TIME STUDENTS BY SEX, CLASSIFICATION, MARITAL STATUS, DEGREE PROGRAM, AND ACADEMIC LOAD

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	Hours Worked Per Week			
Levels	1-13	14-26	27-39	40+
Female	24	30	10	14
Male	38	78	87	325
X^2 for equality = 1011.082	Degrees of Freedom = 7			
X^2 for proportion = 26.5630	Degrees of Freedom = 3			
Coefficient of Contingency = 0.1966				
Freshman	16	19	31	106
Sophomore	46	89	66	233
X^2 for equality = 469.854	Degrees of Freedom = 7			
X^2 for proportion = 17.5078	Degrees of Freedom = 3			
Coefficient of Contingency = 0.1630				
Single	48	83	60	53
Married	14	21	36	280
Other	0	4	1	6
X^2 for equality = 1294.752	Degrees of Freedom = 11			
X^2 for proportion = >999.	Degrees of Freedom = 6			
Coefficient of Contingency = 0.5443				
College Transfer	29	49	18	24
Technical	29	55	77	307
Vocational	4	4	2	8
X^2 for equality = 1538.276	Degrees of Freedom = 11			
X^2 for proportion = >999.	Degrees of Freedom = 6			
Coefficient of Contingency = 0.5167				
12-15 Credit Hours	25	39	41	245
16+ Credit Hours	37	69	56	70
X^2 for equality = 940.732	Degrees of Freedom = 11			
X^2 for proportion = >999.	Degrees of Freedom = 6			
Coefficient of Contingency = 0.4494				

TABLE IV

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ADJUSTED ANALYSIS OF CELL EQUALITY AND PROPORTIONALITY

	Hours Worked Per Week		
Levels	1-13	14-26	27-39
Female	24	30	10
Male	38	78	87
X^2 for equality = 107.674	Degrees of Freedom = 5		
X^2 for proportion = 22.1250	Degrees of Freedom = 2		
Coefficient of Contingency = 0.2539			
Freshman	16	19	31
Sophomore	46	89	66
X^2 for equality = 91.898	Degrees of Freedom = 5		
X^2 for proportion = 11.4092	Degrees of Freedom = 2		
Coefficient of Contingency = 0.1907			
Single	48	83	60
Married/Other	14	25	37
X^2 for equality = 69.696	Degrees of Freedom = 5		
X^2 for proportion = >999.	Degrees of Freedom = 2		
Coefficient of Contingency = 0.4536			
College Transfer	29	49	18
Technical	29	55	77
X^2 for equality = 54.929	Degrees of Freedom = 5		
X^2 for proportion = 18.7593	Degrees of Freedom = 2		
Coefficient of Contingency = 0.2302			
12-15 Credit Hours	25	39	41
16+ Credit Hours	37	69	56
X^2 for equality = 27.224	Degrees of Freedom = 5		
X^2 for proportion = 18.0605	Degrees of Freedom = 2		
Coefficient of Contingency = 0.2274			

applied to the total employed full-time student population realizing that the F ratio obtained could be biased due to inequality and disproportionality between cells of data. The F ratio obtained, however, did not exceed the critical value of F at the .05 level of significance; therefore, the directional sub-hypothesis was rejected and the null hypothesis was accepted (Tables V, VI).

Sub-Hypothesis III. To test directional hypothesis that there is a significant difference between current grade point averages of full-time students working a designated number of hours per week as categorized by academic load (12-15 credit hours and 16 or more credit hours), a two-way Analysis of Variance was applied. The F ratio obtained from Level A (academic load) X Level B (hours worked per week) did not exceed to critical value of F at the .05 level of significance; therefore, the directional hypothesis was rejected and the null hypothesis accepted (Tables VII, VIII).

T-tests were applied to determine if there was a significant difference between the current grade point averages of full-time students working forty or more hours per week and students working 1-13, 14-26, and 27-39 hours per week as categorized by academic load (12-15 credit hours and 16 or more credit hours). A significant difference was found in the grade point averages of students attempting 12 to 15 credit hours and working 27-39 hours per week and

TABLE V

MEAN CURRENT GRADE POINT AVERAGES OF FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER WEEK

Hours Worked Per Week	Mean Grade Point Average
1-13	2.524
14-26	2.527
27-39	2.241
40+	2.406

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TABLE VI

ANALYSIS OF CURRENT GRADE POINT AVERAGES OF FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER WEEK

Source	Sum of Squares	Degrees of Freedom	Mean Square	F-ratio
Hours worked per week	2.4060	3	0.802	Not Significant
Within	>9999999.			

*P < .05
**P < .01

TABLE VII

MEAN CURRENT GRADE POINT AVERAGES OF FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER-WEEK AS CATEGORIZED BY ACADEMIC LOAD

	Level A - Academic Load	
Hours Worked Per Week	12-15 Credit Hours	16+ Credit Hours
1-13	2.333	2.652
14-26	2.553	2.512
27-39	2.098	2.346

TABLE VIII

ANALYSIS OF CURRENT GRADE POINT AVERAGES OF FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER WEEK AS CATEGORIZED BY ACADEMIC LOAD

Source	Sum of Squares	Degrees of Freedom	Mean Square	F-ratio
Academic Load (Level A)	0.0460	1	0.046	2.165
Hours Worked (Level B)	0.1144	2	0.057	2.692
A x B	0.0363	2	0.018	0.854
Within		261	0.021	

*P < .05
**P < .01

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students working 40 or more hours per week (Tables IX, X).

Sub-Hypothesis IV. Two-way Analysis of Variance was applied to test the directional hypothesis that there is a significant difference between current grade point averages of full-time students working a designated number of hours per week as categorized by degree program (college transfer, technical). The directional hypothesis was rejected and the null hypothesis was accepted inasmuch as the F ratio of the interaction effect of degree program and hours worked per week did not exceed the critical value of F at the .05 level of significance (Tables XI, XII).

In order to determine if a significant difference existed between the current grade point averages of full-time students working forty or more hours per week and students working 1-13, 14-26, 27-39, hours per week as categorized by degree program, T-tests were applied. A significant difference in grade point averages was found in the full-time students in the College Transfer program working 14-26 hours per week and students in the College Transfer program working forty or more hours per week (Tables XIII, XIV).

Sub-Hypothesis V. The directional hypothesis to determine if there is a significant difference between current grade point averages of full-time students working a designated

TABLE IX

ANALYSIS OF MEAN CURRENT GRADE POINT AVERAGES OF FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER WEEK ATTEMPTING AN ACADEMIC LOAD OF 12-15 CREDIT HOURS

Student Population	Total No. of Cases	Mean Grade Point Avg.	Standard Deviation	Variance
1-13 hrs/week	25	2.3339	1.114	1.2413
40- hrs/week	269	2.4184	0.885	0.7842
T-ratio = -0.4434		Degrees of Freedom = 292		
14-26 hrs/week	39	2.5535	0.827	0.6845
40+ hrs/week	269	2.4184	0.885	0.7842
T-ratio = 0.8951		Degrees of Freedom = 306		
27-39 hrs/week	41	2.0980	0.961	0.9245
40+ hrs/week	269	2.4184	0.885	0.7842
T-ratio = -2.1258*		Degrees of Freedom = 308		

*P < .05
**P < .01

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TABLE X

ANALYSIS OF MEAN CURRENT GRADE POINT AVERAGES OF FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER WEEK ATTEMPTING AN ACADEMIC LOAD OF 16 OR MORE CREDIT HOURS

Student Population	Total No. of Cases	Mean Grade Point Avg.	Standard Deviation	Variance
1-13 hrs/week	37	2.6524	0.816	0.6668
40+ hrs/week	70	2.3585	0.815	0.6650
T-ratio = 1.7554		Degrees of Freedom = 105		
14-26 hrs/week	69	2.5123	0.889	0.7909
40+ hrs/week	70	2.3585	0.815	0.6650
T-ratio = 1.0548		Degrees of Freedom = 137		
27-39 hrs/week	56	2.3462	0.924	0.8542
40+ hrs/week	70	2.3585	0.815	0.6650
T-ratio = -0.0787		Degrees of Freedom = 124		

*$p < .05$
**$p < .01$

TABLE XI

MEAN CURRENT GRADE POINT AVERAGES OF FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER WEEK AS CATEGORIZED BY DEGREE PROGRAM

Level B Hours Worked Per Week	Level A - Degree Program	
	College Transfer	Technical
1-13	2.466	2.576
14-26	2.537	2.510
27-39	2.253	2.233

TABLE XII

ANALYSIS OF CURRENT GRADE POINT AVERAGES OF FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER WEEK AS CATEGORIZED BY DEGREE PROGRAM

Source	Sum of Squares	Degrees of Freedom	Mean Square	F-ratio
Degree Program (Level A)	0.0006	1	0.000	0.026
Hours Worked/week (Level B)	0.1038	2	0.051	2.105
A x B	0.0059	2	0.002	0.120
Within		251	0.024	

*P < .05
**P < .01

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TABLE XIII

ANALYSIS OF MEAN CURRENT GRADE POINT AVERAGES OF FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER WEEK IN THE COLLEGE TRANSFER DEGREE PROGRAM

Student Population	Total No. of Cases	Mean Grade Point Avg.	Standard Deviation	Variance
1-13 hrs/week	29	2.4662	1.052	1.1080
40+ hrs/week	24	1.8541	1.146	1.3134
T-ratio = 1.9852		Degrees of Freedom = 51		
14-26 hrs/week	49	2.5373	0.802	0.6433
40+ hrs/week	24	1.8541	1.146	1.3134
T-ratio = 2.9098*		Degrees of Freedom = 71		
27-39 hrs/week	18	2.2538	0.888	0.7900
40+ hrs/week	24	1.8541	1.146	1.3134
T-ratio = 1.1987		Degrees of Freedom = 40		

*P < .05
**P < .01

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TABLE XIV

ANALYSIS OF MEAN CURRENT GRADE POINT AVERAGES OF FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER WEEK IN THE TECHNICAL DEGREE PROGRAM

Student Population	Total No. of Cases	Mean Grade Point Avg.	Standard Deviation	Variance
1-13 hrs/week	29	2.5762	0.890	0.7930
40+ hrs/week	307	2.4342	0.827	0.6841
T-ratio = 0.8746	Degrees of Freedom = 334			
14-26 hrs/week	55	2.5105	0.853	0.7288
40+ hrs/week	307	2.4342	0.827	0.6841
T-ratio = 0.6248	Degrees of Freedom = 360			
27-39 hrs/week	77	2.2331	0.953	0.9088
40+ hrs/week	307	2.4342	0.827	0.6841
T-ratio = -1.4508	Degrees of Freedom = 382			

*$P < .05$
**$P < .01$

number of hours per week as categorized by sex was tested by applying two-way Analysis of Variance. The F ratio obtained from female-male by hours worked per week did not exceed the critical value of F at the .05 level; therefore, the null hypothesis was accepted (Tables XV, XVI). It should be noted, however, that a significant difference was found at the A level, i.e., females had a significantly higher mean grade point average than males.

T-tests were used to find if there was a significant difference between the current grade point averages of 1) females working forty or more hours per week and females working 1-13, 14-26, and 27-39 hours per week and 2) males working forty or more hours per week and males working 1-13, 14-26, and 27-39 hours per week. No significant difference was found between the current grade point averages (Tables XVII, XVIII).

Sub-Hypothesis VI. To test the directional hypothesis that there is a significant difference between current grade point averages of full-time students working a designated number of hours per week as categorized by academic classification (freshman, sophomore), two-way Analysis of Variance was applied. The F ratio of the interaction effect of academic classification and hours worked per week did not exceed the critical value of F at the .05 level of significance. The directional hypothesis was rejected and the null

TABLE XV

MEAN CURRENT GRADE POINT AVERAGES OF FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER WEEK AS CATEGORIZED BY SEX

Level B Hours Worked Per Week	Level A - Sex	
	Female	Male
1-13	2.647	2.445
14-26	2.880	2.391
27-39	2.475	2.214

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TABLE XVI

ANALYSIS OF CURRENT GRADE POINT AVERAGES OF FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER WEEK AS CATEGORIZED BY SEX

Source	Sum of Squares	Degrees of Freedom	Mean Square	F-ratio
Sex (Level A)	0.1515	1	0.151	4.796*
Hours Worked/week (Level B)	0.0888	2	0.044	1.405
A x B	0.0230	2	0.011	0.364
Within		261	0.031	

*P < .05
**P < .01

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TABLE XVII

ANALYSIS OF CURRENT GRADE POINT AVERAGES OF FEMALE FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER WEEK

Student Population	Total No. of Cases	Mean Grade Point Avg.	Standard Deviation	Variance
1-13 hrs/week	24	2.6479	0.969	0.9394
40+ hrs/week	14	2.9214	1.223	1.4957
T-ratio = -0.7399		Degrees of Freedom = 36		
14-26 hrs/week	30	2.8809	0.647	0.4190
40+ hrs/week	14	2.9214	1.223	1.4957
T-ratio = -0.1398		Degrees of Freedom = 42		
27-39 hrs/week	10	2.4759	1.118	1.2501
40+ hrs/week	14	2.9214	1.223	1.4957
T-ratio = -0.8725		Degrees of Freedom = 22		

*P < .05
**P < .01

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TABLE XVIII

ANALYSIS OF CURRENT GRADE POINT AVERAGES OF MALE FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER WEEK

Student Population	Total No. of Cases	Mean Grade Point Avg.	Standard Deviation	Variance
1-13 hrs/week	38	2.4457	0.946	0.8965
40+ hrs/week	325	2.3838	0.846	0.7166
T-ratio = 0.4200		Degrees of Freedom = 361		
14-26 hrs/week	78	2.3911	0.902	0.8147
40+ hrs/week	325	2.3838	0.846	0.7166
T-ratio = 0.0673		Degrees of Freedom = 401		
27-39 hrs/week	87	2.2143	0.922	0.8515
40+ hrs/week	325	2.3838	0.846	0.7166
T-ratio = -1.6226		Degrees of Freedom = 410		

*P < .05
**P < .01

hypothesis was accepted. Significant difference was found, however, in the current grade point averages of Level A (freshman, sophomore). Sophomores had a significantly higher current grade point average than did freshmen (Tables XIX, XX).

In order to determine if there was a significant difference between the current grade point averages of full-time students working forty or more hours per week and students working 1-13, 14-26, and 27-39 hours per week as categorized by academic classification (freshman, sophomore), T-tests were applied (Tables XXI, XXII). A significant difference was found in the current grade point averages of freshman students working 27-39 hours per week and freshman students working forty or more hours per week.

Sub-Hypothesis VII. Two-way Analysis of Variance was applied to test the directional hypothesis that there is a significant difference between current grade point averages of full-time students working a designated number of hours per week as categorized by marital status (single, married, other) (Tables XXIII, XXIV). No significant difference was found in that the F ratio did not exceed the critical value of F at the .05 level of significance. The analysis did show an F ratio at the B level (hours worked per week) which exceeded the critical value of F at the .05 level, however, due to the inequality and disproportionality of the cells,

TABLE XIX

MEAN CURRENT GRADE POINT AVERAGES OF FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER WEEK AS CATEGORIZED BY ACADEMIC CLASSIFICATION

Level B Hours Worked Per Week	Level A - Academic Classification	
	Freshman	Sophomore
1-13	2.091	2.674
14-26	1.965	2.647
27-39	1.845	2.427

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TABLE XX

ANALYSIS OF CURRENT GRADE POINT AVERAGES OF FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER WEEK AS CATEGORIZED BY ACADEMIC CLASSIFICATION

Source	Sum of Squares	Degrees of Freedom	Mean Square	F-ratio
Academic Classification (Level A)	0.5676	1	0.567	21.933**
Hours Worked/week (Level B)	0.0637	2	0.031	1.232
A x B	0.0032	2	0.001	0.063
Within		261	0.025	

*$P < .05$
**$P < .01$

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TABLE XXI

ANALYSIS OF CURRENT GRADE POINT AVERAGES OF FRESHMAN FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER WEEK

Student Population	Total No. of Cases	Mean Grade Point Avg.	Standard Deviation	Variance
1-13 hrs/week	16	2.0918	1.029	1.0588
40+ hrs/week	106	2.2634	0.909	0.8267
T-ratio = -0.6854		Degrees of Freedom = 120		
14-26 hrs/week	19	1.9657	0.899	0.8084
40+ hrs/week	106	2.2634	0.909	0.8267
T-ratio = -1.3058		Degrees of Freedom = 123		
27-39 hrs/week	31	1.8454	1.018	1.0377
40+ hrs/week	106	2.2634	0.909	0.8267
T-ratio = -2.1731*		Degrees of Freedom = 135		

*$p < .05$
**$p < .01$

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TABLE XXII

ANALYSIS OF CURRENT GRADE POINT AVERAGES OF SOPHOMORE FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER WEEK

Student Population	Total No. of Cases	Mean Grade Point Avg.	Standard Deviation	Variance
1-13 hrs/week	46	2.6743	0.887	0.7880
40+ hrs/week	233	2.4709	0.846	0.7165
T-ratio = 1.4720		Degrees of Freedom = 277		
14-26 hrs/week	89	2.6470	0.812	0.6594
40+ hrs/week	233	2.4709	0.846	0.7165
T-ratio = 1.6834		Degrees of Freedom = 320		
27-39 hrs/week	66	2.4272	0.851	0.7256
40+ hrs/week	233	2.4709	0.846	0.7165
T-ratio = -0.3681		Degrees of Freedom = 297		

*P < .05
**P < .01

TABLE XXIII

MEAN CURRENT GRADE POINT AVERAGES OF FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER WEEK AS CATEGORIZED BY MARITAL STATUS

Level B Hours Worked Per Week	Level A - Marital Status	
	Single	Married/Other
1-13	2.479	2.676
14-26	2.459	2.752
27-39	2.298	2.149

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TABLE XXIV

ANALYSIS OF CURRENT GRADE POINT AVERAGES OF FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER WEEK AS CATEGORIZED BY MARITAL STATUS

Source	Sum of Squares	Degrees of Freedom	Mean Square	F-ratio
Marital Status (Level A)	0.0193	1	0.019	0.723
Hours Worked/week (Level B)	0.1816	2	0.090	3.389*
A x B	0.0539	2	0.026	1.007
Within		261	0.026	

*P $\angle$ .05
**P $<$ .01

the F ratio obtained had been biased and the significance cannot be accepted.

In order to determine if a significant difference existed between the current grade point averages of full-time students working forty or more hours per week and students working 1-13, 14-26, and 27-39 as categorized by marital status, T-tests were applied. No significant differences were found in the current grade point averages (Tables XXV, XXVI).

Summary

In summary, analysis of data produced the following:

1. No significant difference was found in the current grade point averages of employed full-time students and the total full-time student population.

2. No significant difference existed between the current grade point averages of employed and non-employed full-time students.

3. Current grade point averages of full-time students working a designated number of hours per week were not found to be significantly different.

4. No significant difference was found in the current grade point averages of full-time students working a designated number of hours per week attempting 12-15 credit hours and full-time students working a designated number of hours per week attempting 16 or more credit hours. It was

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TABLE XXV

ANALYSIS OF CURRENT GRADE POINT AVERAGES OF SINGLE FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER WEEK

Student Population	Total No. of Cases	Mean Grade Point Avg.	Standard Deviation	Variance
1-13 hrs/week	48	2.4795	1.039	1.0802
40+ hrs/week	53	2.2273	1.053	1.1104
T-ratio = 1.1970		Degrees of Freedom = 99		
14-26 hrs/week	83	2.4593	0.907	0.8241
40+ hrs/week	53	2.2273	1.053	1.1104
T-ratio = 1.3541		Degrees of Freedom = 134		
27-39 hrs/week	60	2.2981	0.930	0.8659
40+ hrs/week	53	2.2273	1.053	1.1104
T-ratio = 0.3759		Degrees of Freedom = 111		

*$P < .05$
**$P < .01$

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TABLE XXVI

ANALYSIS OF CURRENT GRADE POINT AVERAGES OF MARRIED/OTHER FULL-TIME STUDENTS WORKING A DESIGNATED NUMBER OF HOURS PER WEEK

Student Population	Total No. of Cases	Mean Grade Point Avg.	Standard Deviation	Variance
1-13 hrs/week	14	2.6764	0.594	0.3533
40+ hrs/week	286	2.4293	0.841	0.7085
T-ratio = 1.0814		Degrees of Freedom = 298		
14-26 hrs/week	25	2.7523	0.671	0.4506
40+ hrs/week	286	2.4293	0.841	0.7085
T-ratio = 1.8616		Degrees of Freedom = 309		
27-39 hrs/week	37	2.1491	0.968	0.9388
40+ hrs/week	286	2.4293	0.841	0.7085
T-ratio = -1.8647		Degrees of Freedom = 321		

*p < .05
**p < .01

found, however, that students working 40 or more hours per week and attempting 12-15 credit hours had a significantly higher grade point average than students working 27-39 hours per week and attempting 12-15 credit hours.

5. Current grade point averages were not found to be significantly different between full-time students working a designated number of hours per week in the college transfer degree program and the technical degree program. Significant difference was found, however, in that the current grade point averages of full-time students in the college transfer degree program working 14-26 hours per week were significantly higher than the current grade point averages of full-time students in the college transfer degree program working 40 or more hours per week.

6. No significant difference was found in the current grade point averages of female and male full-time students working a designated number of hours per week.

7. The current grade point averages of freshman and sophomore full-time students working a designated number of hours per week were not found to be significantly different.

8. No significant difference was found in the current grade point averages of single and married/other full-time students working a designated number of hours per week.

X. CONCLUSIONS AND SIGNIFICANCE

From the data analyzed in this study, it was concluded that employed full-time students at Wilkes Community College attempting 12-15 credit hours and working forty or more hours per week had significantly higher grade point averages than those students attempting 12-15 credit hours and working between 27 and 39 hours per week.

It was concluded also that students enrolled in the college transfer program at Wilkes Community College attempting 12-15 credit hours working 14-26 hours per week made significantly higher grade point averages than those students enrolled in this same program and working 40 or more hours per week.

Based on the conclusions noted above, consideration should be given to the effects of academic load and degree program on grade point averages of working students when developing guidelines for counseling such students.

Residual Findings

Several findings not directly related to the problem or sub-problems of this study were noted. They are:

1. females make significantly higher grade point averages than males.

2. sophomores make significantly higher grade point averages than freshmen.

Further Studies

The limited scope of this present study suggests that further studies be undertaken to pursue the problem and sub-problems investigated. Possible future studies could include:

1. A study to follow a specific class of students through the six quarters of each degree program.

2. A study to incorporate the student population of each of the eleven institutions of the Appalachian Developing Institutions Consortium.

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